

**c. Amendments to Claims**

1. (Currently amended) An apparatus for mode converting, comprising:  
first and second optical waveguides; and  
a GRIN fiber lens attached to both the first and the second waveguides; and  
wherein one end of the GRIN fiber lens is attached directly to an end of the first  
optical waveguide and an opposite end of the GRIN fiber lens is attached directly to an  
end of the second optical waveguide.
2. (Currently amended) The apparatus of claim 1, wherein the attached ends  
of the first and second waveguides are fused or glued to the GRIN fiber lens.
3. (Original) The apparatus of claim 2, wherein the first and second waveguides  
are first and second optical fibers, respectively.
4. (Original) The apparatus of claim 3, wherein the first fiber has propagation  
modes with different sizes than the second fiber.
5. (Original) The apparatus of claim 3, wherein the lens has a magnification, the  
magnification times the size of a fundamental propagation mode of the first fiber being  
about equal to the size of a fundamental propagation mode of the second fiber.
6. (Original) The apparatus of claim 3, wherein the first and second fibers have  
cores with different diameters.
7. (Original) The apparatus of claim 3, wherein each fiber has a core and a  
cladding; and a discontinuity in refractive index across an interface between the core and  
cladding, the discontinuities being different across the interfaces of the first and second  
fibers.
8. (Original) The apparatus of claim 3, wherein the GRIN fiber lens comprises a  
series of connected GRIN fiber lenses; the first GRIN fiber lens of the series being

attached to the first fiber and the last GRIN fiber lens of the series being attached to the second fiber.

9. (Original) The apparatus of claim 1, wherein the GRIN fiber lens has a core with a graded refractive index profile, the profile having a radial second derivative whose average magnitude is less than about  $2.4 \times 10^{-5}$  microns<sup>-2</sup> in the core.